CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter discusses resources that may be affected by actions taken to provide fish screening in the Redlands Power Canal. During preparation of this environmental assessment, information on issues and concerns was received from affected water users, resource agencies, private interests, recreational interest groups and citizens, and other interested parties (see Chapter 4, Consultation and Coordination, for further details).

For each resource, the potentially affected area and/or interests are identified, existing conditions described, and impacts predicted under the No Action and Proposed Action Alternatives. This chapter is concluded with a summary comparison of the alternatives and a list of mitigation measures.

GENERAL

The project is located in Mesa County, Colorado along the Gunnison River. Mesa County has a population of about 110,000. Grand Junction, the largest city in the area, was founded in 1881. Construction of the first irrigation project began in 1882 with the construction of the Pacific Slope Ditch to supply Grand Junction with water.

The Redlands Diversion Dam is a privately owned and operated structure located on the Gunnison River approximately 2.3 miles upstream from the confluence with the Colorado River (frontispiece map). The Redlands Water and Power Company constructed the diversion dam in 1918 and has since modified and upgraded it. The concrete dam is 8.5 feet high and consists of a 312-foot-long spillway with a 6-foot-wide crest and two 10-foot-wide by 6-foot-high sluice gates. A flow of 850 cubic feet per second (cfs) is diverted through four 14-foot-wide headgates on the west side into the Redlands Power Canal. This flow is used for irrigation water and hydroelectric power generation. In 1983, the Federal Energy Regulatory Commission (FERC) exempted the Redlands Water and Power Company from licensing under FERC regulations. This exemption required that fish passage be allowed around the dam. In addition in 2003, Redlands installs flashboards on top of the dam to improve their operations.

In 1996, the Recovery Program constructed a selective fish ladder at the Redlands Diversion Dam to provide endangered fish access upstream to additional critical habitat (Figure 2). The Service has operated the fish ladder seasonally since 1996. Additional information about the Redlands Fish ladder can be found in the Service's 1996-2000 evaluation report (Burdick, 2001) and the fish screen's biological assessment (Reclamation, 2003).

Figure 2-Redlands Diversion Dam and Fish Ladder

Although agriculture remains important in the Grand Valley today, light manufacturing and service industries also influence the local economy. Tourism is also a significant source of economic activity for the area.

WATER RESOURCES

Water Rights and Use

Issue: The proposed action must not interfere with the Redlands Water and Power Companies operations.

Existing Conditions: The Redlands Diversion Dam and Redlands Power Plant are operated year round to provide water for irrigation and hydroelectric power generation. The Redlands Diversion Dam diverts about 750 cfs into the Redlands Power Canal year-round. A junior water right for an additional 100 cfs is rarely available for use. About 70 cfs of irrigation water is pumped or diverted from the canal to serve residents of the Redlands area. The irrigation season lasts approximately 6 months from April 15 to October 15. The rest of the year, the power canal is operated solely for generation of hydroelectric power. Redlands Water and

Power Company operates the diversion dam to maintain the 850 cfs flow into their canal as much as possible.

The Redlands Water and Power Company water rights are senior within the Gunnison River Basin and RWPC holds water right decrees as follows:

670 cfs – priority date July 31, 1905.

Allowed uses: irrigation, domestic stock, and power generation.

80 cfs – priority date June 26, 1941.

Allowed uses: irrigation and power generation.

100 cfs – priority date 1995

Allowed uses: irrigation, domestic stock, and power generation.

Total Water Right: 850 cfs

The City of Grand Junction also has water rights for tailrace water from the Redlands Power Plant in the amounts of 8 cfs and 50 cfs. Typically 3-4 cfs is pumped from the tailrace to provide irrigation water to a residential community and golf course from April 1 to November 1. These rights are junior to RWPC's and dependent on RWPC's operations. Redlands typically discontinues diversions for a few days to a week period in Mid-March and Mid October for repairs and maintenance. The period of time that the canal is dewatered is dependent on the amount of repairs and maintenance needed. During these times, tailrace water is not available to the City of Grand Junction. RWPC is under no obligation to provide water to the City of Grand Junction during the canal outage periods, however RWPC attempts to meet the City of Grand Junction's needs when ever possible.

Impacts: The No Action Alternative would have no direct affect on RWPC or the City of Grand Junction water rights and uses. However, taking no action would result in failure to make sufficient progress in Recovery Program efforts to restore endangered fish populations. This could trigger future Service consultations under the Endangered Species Act, which could create confrontations between endangered fish recovery and water users. In addition, entrainment of Colorado pikeminnow and razorback sucker would continue and Redlands Water and Power Company would be in violation of the prohibitions of take under the Endangered Species Act.

Proposed Action: Providing fish screening for the Redlands Power Canal would not significantly affect Redlands Water and Power Company's ability to use their existing water

rights. Under an existing agreement with the Colorado Water Conservation Board that expires in 2005, Reclamation ensures deliveries to maintain 300 cfs below the Redlands Diversion Dam with releases from the upstream Aspinall Unit for Redlands Fish Passage operations. Under the proposed action, 40 cfs of the 300 cfs would be used for fish screen operations.

A bypass channel capable of diverting RWPC's total water right of 850 cfs is included in the fish screen designs. During times when the fish screen is inoperable because of ice or debris, isolation bulkheads would be used to bypass the fish screen. The installation of the fish screen would result in a minimal canal head loss. In 2003, RWPC installed flashboards on the diversion dam to raise the water elevation.

RWPC would not be able to divert water through the power plant for a 5 month period between November 1 and April 1 to dewater the fish screen construction site. RPWC diverts water from the Redlands Diversion Dam during this period only for hydropower generation. Construction dewatering would result in a loss of hydropower revenue during canal dewatering and Recovery Program has agreed to compensate RWPC for hydropower revenue losses during construction.

The City of Grand Junction's water rights are dependent on RWPC diversions. Construction activities could be coordinated to continue diversions until November 1st, and resume by April 1st to allow adequate time for the fish screen and bypass channel construction. However, it is RWCP's discretion when they dewater their canal. Operation and maintenance of the fish screen would have no effect of the City of Grand Junction's ability to exercise their water right.

Issue: Reclamation has an existing agreement with the Colorado Water Conservation Board to maintain 300 cfs of river flow below the Redlands Diversion Dam.

Existing Conditions: In 1996, Reclamation entered into an agreement with the Colorado Water Conservation Board (CWCB) to deliver water from the Aspinall Unit to ensure that a minimum of 300 cfs was maintained downstream of the Redlands Diversion Dam in the months of July through October for the benefit of the Colorado pikeminnow and razorback sucker. The 300 cfs is used to operate the Redlands fish ladder and maintain adequate flows below the dam to allow endangered fish to navigate upstream from the Colorado River to the fish ladder entrance. The interim agreement expires in 2005 and a permanent agreement regarding flows below the Redlands Diversion Dam will be addressed in the Environmental Impact Statement and Record of Decision for operational changes for the Aspinall Unit that are related to compliance with the Endangered Species Act (ESA). During the period between when the agreement expires (2005) and the issuance of a Record of Decision, Reclamation will to the extent allowable under State and Federal laws, attempt to release from the Aspinall Unit sufficient water to maintain a minimum flow of 300 cfs during the months of July, August, September, and October in the Gunnison River from the Redlands Diversion Dam to the confluence of the Gunnison River with the Colorado River. During drought periods when the 300 cfs flow below Redlands may not be

possible, and Reclamation would work with the Service and water users in the Gunnison Basin to provide flows lower than 300 cfs below Redlands.

During the drought of 2002, RWPC entered into a one-time agreement with the Colorado River District to forego power production in lieu of payment for power interference to prevent a Gunnison River call to upstream junior water users. "Shared shortage" provisions of Reclamation's water delivery contract with CWCB were implemented and fish flows below Redlands were reduced below 300 cfs. The combination of the River District's agreement and the implemented "shared shortage' provisions allowed for the continued operation of the fish ladder and sufficient flows downstream of the dam during the drought, while holding off a call to upstream junior water users.

No Action: Under the No Action Alternative, additional flows would not be needed for the Redlands fish screen.

Proposed Action: Under the proposed action, 40 cfs of the 300 cfs minimum flow below the Redlands Diversion Dam would be used to operate the fish screen. The 40 cfs would be diverted at the diversion dam into the Redlands Power Canal and returned to the Gunnison River via the fish return pipeline.

Water Quality

Issue: Fish screen construction could cause temporary water quality changes downstream. This could affect the ability of the downstream domestic water providers to meet drinking water standards and protect public safety.

Existing Conditions: The City of Grand Junction has a domestic water right of 18.6 cfs upstream of the Redlands Diversion Dam. This source is designed to supplemental other sources. There are no downstream domestic water providers in the Gunnison or Colorado River downstream of the Redlands Diversion Dam that would be affected. The closest domestic water supplier downstream of the Redlands Diversion Dam on the Colorado River, is located in Moab, Utah.

No Action: The No Action Alternative would have no affect on water quality.

Proposed Action: The proposed action may have minor impacts to water quality during construction. This could include increased river turbidity during construction and removal of a temporary cofferdam needed to construct the fish return outlet structure. Construction would occur during the winter months when the Gunnison River flows are low and Reclamation would request authorization from the U.S. Army Corps of Engineers under Regional General Permit No. 57, Projects beneficial to the Upper Colorado Endangered Fishes Recovery. The placement of concrete and riprap below the normal high water line would be necessary to protect the fish

return pipeline during high flow events. The cofferdam and fish return pipeline outlet structure are considered discharges into "Water of the United States" and require authorization from the Army Corps of Engineers under the Clean Water Act. The proposed action would have no affect on quality of the City of Grand Junction's water supplies.

VEGETATION AND LAND USE

During construction of the proposed action alternative, an increase in noise and traffic would occur. To date, Reclamation has not been advised of concerns regarding disturbances during construction. Any complaints would be resolved on a case-by-case basis. Access for construction, operations and maintenance would utilize existing roadways.

Issue: The Gunnison River provides highly valued habitat and floodplain functions that need to be considered during construction of the fish screen.

Existing Conditions: The Gunnison River Basin is primarily rural in nature. A majority of the roughly 8,000 square-mile watershed is comprised of National Forest or Bureau of Land Management (BLM) lands. Valleys are largely private and were originally developed for ranching, farming and mining. In recent years, recreation, retirement living, and second-home development have become important. In the vicinity of the Redlands Diversion Dam, lands are a primarily a combination of privately owned parcels, sand and gravel operations, Redlands Water and Power Company, and federal lands managed by the BLM. The BLM owns the land on the west side of the Gunnison River at the Redlands Diversion Dam site. RWPC has used this BLM land since at least 1918.

The Southern Pacific Railroad parallels the east bank of the Gunnison River in this area and primarily hauls coal in unit trains. The railroad and the Redlands Diversion Dam are the primary land use. The City of Grand Junction has a water intake structure on the east side of the diversion dam on land leased from RWPC. This structure is located upstream of the proposed fish screen. Residential homes and limited farming occur downstream to confluence of the Gunnison and Colorado Rivers.

The proposed fish screen site is located approximately ¼ miles downstream of the Redlands Diversion Dam. The area's dominate features include the Redlands Canal and a large linear riparian corridor between the canal and the Gunnison River (See Figure 3). The riparian corridor is dominated by mature cottonwoods trees, willows, Russian olives, tamarisk, wild rose, and skunkbush sumac. The area west of the canal, away from the influence of the river, changes to an upland community comprised predominately of greasewood, rabbitbrush and four-wing saltbush. Disturbed areas are dominated by kochia, bindweed, grasses and forbs.

Impacts

No Action: The No Action alternative would have no effect on existing vegetation or current land uses.

Proposed Action: The fish return pipeline would disturb about 1 acre of riparian vegetation owned by RWPC with grubbing and trenching. This would result in the loss of approximately 10 mature cottonwood trees. After construction, the area would be re-vegetated with cottonwood and willow plantings and appropriate riparian grasses. Fifty cottonwood and willow seedlings (5 to 1 ratio) would be planted in the area and tamarisk would be removed to mitigate for the loss of the 10 mature cottonwood trees. A 50-ft. corridor (25 feet on each side of the pipe) would be maintained to protect the pipe and allow for access for maintenance of the fish return outlet structure. The O&M contract between Reclamation and RWPC would address long-term control of tamarisk and noxious weeds within the fish return pipeline easement.

Reclamation would request authorization from the Army Corps of Engineers under Regional General Permit No. 57, Projects beneficial to the Colorado River endangered fishes, for the construction of the fish screen. The fish return pipeline outlet structure would require discharge of concrete and fill material; however no jurisdictional wetlands would be affected. No changes in land use are predicted as a result of the proposed action.

FISH AND WILDLIFE RESOURCES

Existing Conditions: The affected area, for the purposes of assessing fish and wildlife, corresponds to the 100 year floodplain of the Gunnison River from the Redlands Diversion Dam to the Gunnison River's confluence with the Colorado River. There are no significant concerns for project effects on fish and wildlife resources in general; concerns focus on avoiding and minimizing adverse impacts to endangered species as well as complementing efforts to establish self-sustaining populations of endangered Colorado River fish species.

Riparian habitat along the Gunnison River support diverse wildlife populations. Similar riparian habitats along the Colorado and Gunnison rivers support both resident and migratory wildlife species and these species are also likely to occur within the project area (Reclamation, 2003b).

Common terrestrial species at Walter Walker SWA along the Colorado River include Northern sagebrush lizard (*Sceloporus graciosus grciosus*), Northern whiptail (*Cnemidophorus tigris septentrionalis*), gopher snake (*Pituophis catenifer*), great blue heron (*Ardea herodias*), Canada goose (*Branta canadensis*), mallard (*Anas platyhynchos*), rock dove (*Columba livia*), mourning dove (*Zenaida macroura*), common nighhawk (*Chordeiles minor*), black-chinned hummingbird (*Archilochus alexandri*), tree swallow (*Tachycineta bicolor*), black-billed magpie (*Pica pica*),

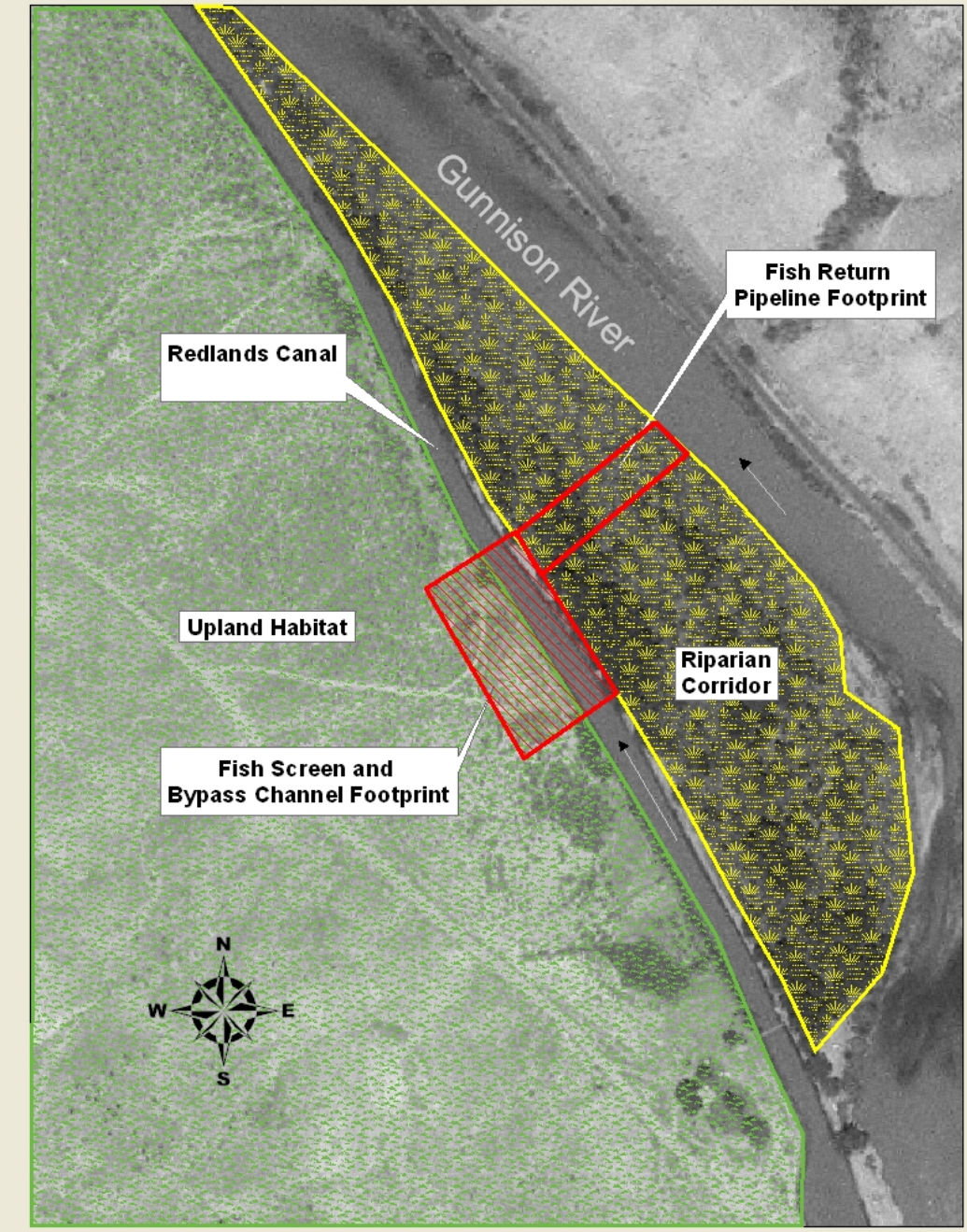

Figure 3-Fish Screen Site Vegetation Types

Amercian robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), Western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euhagus cyanocephalus*), house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), masked shrew (*Sorex cinereus*), Western small-footed myotis (*Myotis californicus stephensi*), long-legged myotis (*Myotis volans interior*), hoary bat (*Lasiurus cinereus cinereus*), desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), white-tailed jackrabbit (*Lepus townsendii*), least chipmunk (*Tamias minimus*), Northern pocket gopher (*Thomomys talpoides*), Ord's kangaroo rat (*Dipodmys ordii sanrafaeli*), deer mouse (*Peromyscus maniculatus*), house mouse (*Mus musculus*), common muskrat (*Ondatra zibethicus*), coyote (*Canis latrans*), long-tailed weasel (*Mustela frenata*), striped skunk (*Mephitis mephitis*), bobcat (*lynx rufus*), mule deer (*odocoileus hemionus*), tiger salamander (*Ambystoma tigrinum*), Woodhouse's toad (*Bufo woodhousii woodhousii*), bullfrog (*Rana catesbeiana*), and Northern leopard frog (*Rana pipiens*) (CDOW 2002).

Common fish species in the Gunnison River include blue head sucker (*Catostomus discobolus*), flannelmouth sucker (*Catostomus latipinnis*), roundtail chub (*Gila robusta*), common carp (*Cyprinus carpio linnaeus*), fathead minnow (*Pimephales promelas*), red shiner (*Cyprinella lutrensis*), sand shiner (*Noptropis stamineus*), and channel catfish (*Ictalurus punctatus*) (Burdick, 2001).

No Action: The No Action alternative would have no effect on terrestrial wildlife species and canal entrainment of common fish species would continue with unscreened diversions.

Proposed Action: Local wildlife would likely be temporarily displaced and avoid the project area during construction. Construction would occur outside the nesting season, and long-term effects are predicted to be negligible. Re-vegetation of disturbed areas using riparian species would also assist in minimizing effects to local wildlife. Operation and maintenance of the fish screen would be beneficial to common fish species. Canal entrainment would be minimized and screened fish would be returned to the Gunnison River.

THREATENED AND ENDANGERED SPECIES

Reclamation formally consulted with the Service under the Endangered Species Act regarding construction and operation of the Redlands Fish Screen. A copy of the Service's biological opinion is attached in Appendix A. Informal consultation identified the following threatened and endangered species which may occur within the project area:

Common Name	Scientific Name	Status
Colorado pikeminnow	*Ptychocheilus lucius*	Endangered
razorback sucker	*Xyrauchen texanus*	Endangered
humpback chub	*Gila cypha*	Endangered

bonytail	*Gila elegans*	Endangered
bald eagle	*Haliaeetus leucocephalus*	Threatened

Proposed Action effects to threatened and endangered species were analyzed in a biological assessment (BA) prepared by Reclamation (Reclamation, 2003). The purpose of the fish screen is to minimize incidental take of endangered Colorado River fishes that currently or may occur as a result of the Redlands Diversion. The scope of the biological assessment was broadened to also incorporate RWPC operations and depletions under Reclamation's Section 7 formal consultation with the Service. Incidental take as a result of RWPC's operations was identified and is a primary reason for the Recovery Program's participation in the construction of the fish screen.

Bald eagles are known to use portions of the lower Gunnison River during the winter months (Shannon, 2003), however no winter concentration areas have been identified within 1-mile of the project area. In addition, no nesting occurs within the project area. Therefore, the proposed action is predicted to have no effect on Bald eagles.

The Service determined in its biological opinion that water depletions associated with RWPC historic operations, are likely to jeopardize the continued existence of the Colorado pikeminnow, humpback chub, bonytail, and razorback sucker and result in the destruction or adverse modification of their critical habitat. The Service determined that the Upper Colorado River Basin Endangered Fish Recovery Program can serve as the reasonable and prudent alternative to avoid jeopardy to the endangered fishes and destruction or adverse modification of critical habitat caused by the project's historic depletions provided that the following Recovery Implementation Program Recovery Action Plan (RIPRAP) items from the Colorado River Action Plan: Gunnison River, are implemented or continue to be implemented. The RIPRAP items include:

1. RIPRAP II.B.1.g – Screen Redlands diversion structure to prevent endangered fish entrainment. This recovery element is the proposed action under consultation and includes water depletions associated with the RWPC operations. Recovery elements are intended to offset impacts associated with water depletions.

2. RIPRAP II.B.1.c – Operate and maintain Redlands fish ladder. The Redlands fish ladder has been in operation since 1996. The Service will continue to operate the ladder and the RWPC will assume ownership of the ladder and will be responsible for maintenance as identified in cooperation with the Service.

3. RIPRAP 1.C.3 – Provide interim flows from the Aspinall Unit as determined through the continued annual coordination (meeting 3 times/year) of Aspinall operations until the record of decision on Aspinall Operations is completed and implemented.

In order to more efficiently implement the reasonable and prudent alternatives, RWPC and the Service will sign a Recovery Agreement that outlines the responsibility of each party.

An incidental take statement was included in the Service's biological opinion to address incidental take during certain circumstances when the fish screen may not be operational. Take may also occur when adult or subadult fish become impinged on the fish screen or stranded in the fish return pipe when the fish screen is in operation, or stranded in the fish ladder when it is dewatered. Terms and conditions of the incidental take statement are described in biological opinion (Attachment B) and include:

1. The Recovery Program shall continue to monitor larval endangered fishes on the Gunnison River through larval fish sampling. The Recovery Program shall continue to obtain information on location of spawning sites. The Recovery Program shall continue to monitor the status of the adult and subadult endangered fishes in the Gunnison River.

2. The RWPC shall provide a report to the Service annually that enumerates the number of days the fish screen was not operated and the reasons the fish screen was not operated. If during the first year of operation, major problems are encountered, RWPC shall contact the Service and cooperatively determine a course of action to resolve the problem. Meetings should be held periodically to continue enhancing the operation of the fish screen.

3. The RWPC shall report any dead or injured endangered fish found in vicinity of RWPC to the Project Leader, Fish and Wildlife Service, Colorado Fishery Project, Grand Junction, Colorado (970/245-9319). As required by protocol, the Service will report any dead or injured listed species to the Service's Division of Law Enforcement.

INDIAN TRUST ASSETS

Indian trust assets are legal interests in property held by the United States for Indian Tribes or individuals. Reclamation and other Federal agencies share the responsibility to protect these assets. There have been no trust assets identified in the project area, and therefore no impacts on these assets are predicted.

ENVIRONMENTAL JUSTICE

Executive Order 12898 on Environmental Justice provides that Federal agencies analyze programs to assure that they do not disproportionately adversely affect minority or low income populations or Indian Tribes. There are no potentially affected minority or low income

populations in the project area, and no adverse effects related to environmental justice are predicted.

SOCIOECONMIC CONDTIONS

Existing Conditions: The Gunnison River has long been a key factor in the economy of the Gunnison Basin. The river supports agricultural enterprises, municipal water supplies, and a growing recreation sector in the economy. The operation of the Redlands Diversion Dam and other water projects in the basin is important for the maintenance of existing agricultural and suburban lifestyles in the area.

Impacts

No Action: Under the No Action alternative, the Recovery Program would not provide funding for the construction, operation and maintenance of a fish screen in the Redlands Power Canal. Without assistance from the Recovery Program, RWPC would bear all costs associated with minimizing incidental take associated with RWPC operations. As a small water district, these added costs would have a significant impact to RWPC and its costumers. Under the Recovery Program, recovery implementation costs are covered by federal power revenues, state cost sharing contributions, and Federal appropriations.

Proposed Action: Construction of the fish screen would result in additional expenditures in the local economy, but it is a relatively small project and would not significantly affect the local economy nor place a strain on any services such as schools or transportation.

Because operation and maintenance costs would be funded by the Recovery Program, RWPC would not bear additional expenses directly associated with the construction, operation or maintenance of the fish screen. However, the fish screen would result in a small head loss at the diversion dam which could reduce power generation and reduce revenues. Redlands, separate from the proposed action, installed flashboards on the diversion dam to offset the head loss as a result of the fish screen. RWPC would not be able to generate hydropower during construction of the fish screen. This would result in about 4 months loss of winter power generation revenue and the Recovery Program has agreed to compensate RWPC for hydropower revenue losses associated with construction of the fish screen.

CULTURAL RESOURCES

Existing Conditions:

Over the years, land in the immediate project area has been disturbed by various construction and maintenance projects related to the Redlands Diversion Dam, railroad construction, agricultural

practices, gravel mining, and other activities. Evidence of prehistoric resources is not present, however, historic resources occur.

The Redlands Dam Complex, including the diversion dam, canal system, and power plant, has been recorded as a historic site (5ME764) and is considered eligible for the National Register of Historic Places by the Colorado Historical Society. During construction of the fish passageway at the Redlands Diversion Dam, the dam was considered to be non-contributing to the historic nature of the complex due to extensive rehabilitation and modifications with modern materials.

Impacts:

No Action: The No Action alternative would have no affect on cultural or historic resources.

Proposed Action: Archaeological resource surveys conducted by Reclamation staff archaeologists identified no cultural resources within the project area; therefore the proposed action would have no affect on cultural resources. Reclamation, in consultation with the Colorado Historic Preservation Officer, determined that the proposed action would have no adverse affect on the Redlands Dam Complex. Reclamation's construction contracts would have "stop work" clauses, which would stop construction activities in the event cultural resources were uncovered. Work would not resume until consultation with the Colorado Historic Preservation Officer was completed.

RECREATION RESOURCES

Existing Conditions: The Gunnison River between Delta and Grand Junction is used by motorized and non-motorized boaters. Recreational floating occurs in the summer months. There is also some fall and early winter floating associated with hunting. The river is accessible upstream at Whitewater and a 1 day float can be made between Whitewater and the Redlands Diversion Dam.

The Redlands Diversion Dam is a barrier to uninterrupted river travel, and boaters must portage around the dam. In the late 1990's, the Bureau of Land Management constructed a boat take-out and portage around the Redlands Diversion Dam.

No Action: The No Action alternative would have no effect on recreation resources.

Proposed Action: Construction of the fish screen in the Redlands Canal would have no effect on recreational uses. The Redlands Diversion Dam would continue to be a barrier to uninterrupted river travel; however, the Bureau of Land Management take-out continues to allow portage around the dam and fish passageway.

CUMULATIVE IMPACTS

Cumulative impacts are impacts on the environment, which result from the incremental impact of the action, when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Past and present activities that have affected river related resources in the area include irrigation and hydropower generation, urban development, gravel mining and river recreation. The Recovery Program has implemented floodplain restoration projects, fish passages and fish screen, and other Recovery Implementation Program Action Plan (RIPRAP) elements, which cumulatively have result in beneficial impacts on the endangered Colorado River fishes.

Implementation of all or any of these projects has affected and continues to affect the human environment including but not limited to water quality, water rights, socioeconomic and fish and wildlife resources. Incremental cumulative impacts associated with implementation of the proposed action are anticipated to be too small to measure.

SUMMARY AND ENVIRONMENTAL COMMITMENTS

In summary, the primary effect of the proposed action would minimize incidental take of Colorado pikeminnow, razorback sucker and bonytail in the Redlands Power Canal. Canal head loss as a result of fish screen would likely reduce RWPC ability to generate hydroelectric power at the Redlands Power Plant. RWPC is investigating installing flashboards at the Diversion Dam to recover the head loss. RWPC would lose 4 months of revenue from hydropower generations while the fish screen is being constructed. Local wildlife may avoid the project area during construction; however this impact is predicted to be short-term in nature. In addition, water quality would likely be temporarily impacted during construction of the fish screen bypass pipeline, however this impacted is predicted not to be significant because best management practices would be applied.

The proposed action would have no affect on water rights, cultural and historic properties, environmental justice or Indian Trust assets.

Mitigation Measures

1) Temporary construction easements would be obtained from RWPC prior to beginning construction of the fish screen.
2) Section 404 authorization would be obtained from the Army Corps of Engineers prior to initiating construction activities.

3) Fish screen construction would be limited to between October 15 and April 15th to avoid impacting irrigation deliveries and take advantage of low river flows.
4) Areas disturbed during construction would be revegetated with appropriate upland and riparian plant species (cottonwood trees, willows, Indian ricegrass, etc.). Reclamation would mitigate onsite for the loss of mature cottonwood trees by planting cottonwood saplings at a ratio of 5 saplings for each mature tree and removing tamarisk within the construction area.
5) Long-term tamarisk and noxious weed control within the fish return pipeline easement would be addressed in the O&M contract between Reclamation and RWPC.